REMARKS:

In the foregoing amendments, claims 8-12 were amended to better define applicant's invention. The amendment to claim 12 corrects the dependency thereof. Accordingly, applicant respectfully requests that the examiner reconsider and withdraw the objection to the dependency of claim 12, which was set forth in the outstanding Office action. Claims 15 and 16 were added to the application and define that the ultra-narrow band fluorine laser apparatus is operated to narrow the bandwidth of laser light to about 0.2 to 0.3 pm. Accordingly, claims 8-16 are in the application for consideration by the examiner.

The Official action set forth three different prior art rejections. The first was a rejection of claims 8 and 11 under 35 U.S.C. § 102(e) as being anticipated by U.S. patent No. 6,154,470 of Basting *et al.* (Basting). Basting was previously cited against applicant's claims. This rejection was set forth on page 3 of the Official action. In the second rejection, claims 8 and 9 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. patent No. 5,303,254 of Szatmari. The teachings of Szatmari were newly cited against applicant's claims. This rejection begins at the bottom of page 3 and continues through page 4 of the Official action. In the third rejection, claims 8-14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. patent No. 4,856,018 of Nozue *et al.* (Nozue) in view of U.S. patent No. 5,642,374 of Wakabayashi *et al.* (Wakabayashi). This rejection is set forth on pages 5

through 8 of the Official action. Both Nozue and Wakabayashi were newly cited against applicant's claims.

Applicant respectfully submits that the teachings of Basting, Szatmari, Nozue, and/or Wakabayashi do not disclose or suggest the invention as set forth in any of the present claims within the meaning of 35 U.S.C. § 102 or 35 U.S.C. § 103.

Applicant desires to express thanks to Examiner Diaz for the courtesies extended the undersigned in a personal interview on December 17, 2003. In this interview, the undersigned explained some of the differences between the presently claimed invention and the teachings cited thereagainst. The foregoing amendments to the claims were also discussed. At the time of the personal interview, it appeared that the examiner would allow the application. In particular, the examiner indicated that the range of bandwidth as set forth in claim 10 appeared to set forth allowable subject matter. However, the examiner indicated he needed to consider this matter further.

In this connection, it is respectfully noted that a telephone interview was conducted with the examiner in the parent application. At the time of the telephone interview, it also appeared that the examiner would allow the application, if claim 1 was amended by adding the expression "with without use of an optical element for further narrowing a bandwidth of an oscillation beam of laser light" at the end of the claim, which limitation is now present in applicant's claim 9. For these reasons, applicant respectfully submits that the

claims in this application are in condition, and a formal allowance thereof is earnestly solicited.

As explained in the interviews with the examiner, in the presently claimed invention, the bandwidth of the oscillation beam of laser light is controlled by reducing the total pressure of the laser gas without use of an optical element for further narrowing the bandwidth of the oscillation beam laser light. As shown in figure 2 of the present application, as the total gas pressure (atm) is reduced from a value of about 4 atm, the bandwidth is narrowed. At a total laser gas pressure of about 2.8 atm, the bandwidth is about 0.6 pm. No teaching cited against applicant's claims remotely contemplates any relationship concerning the lowering the total laser gas pressure from a value of about 5 atm, which is normally used for laser oscillation, to a lower value, such as about 2.8 atm, for reducing bandwidth of laser light as required in the present claims.

The Official action noted Basting at column 2, lines 30-34; column 6, lines 8-10; and column 8, lines 54-57. Perhaps, the most pertinent of these portions of Basting is the discussion at column 2, lines 30-34, concerning a total pressure of less than 5 bars. The teachings of Basting, at best, could possibly motivate one of ordinary skill in the art to use a total pressure of slightly less than 5 bars (i.e., 4.9 bars). See the examples of Basting that use a total pressure of approximately 5 bars. However, applicant respectfully submits that these portions or any other portions of the teachings of Basting

do not contemplate or suggest the operation of the device therein for narrowing a bandwidth of laser light to a desired value by maintaining total pressure of the laser gas equal to or lower than 2.8 atm, as set forth in the present claims. In fact, the teachings of Basting are utilizing etalons for narrowing the bandwidth of laser light in direct contrast to claim 9.

While the Official action noted Basting at column 3, lines 48-50, and column 4, lines 24-28, as suggesting the invention set forth in claim 11, applicant does not understand how these portions of Basting do this. Accordingly, an additional explanation of this position is respectfully requested.

With respect to Szatmari, applicant respectfully submits that these teachings are not particularly pertinent to the presently claimed invention. For example, the presently claimed invention is directed to a fluorine laser. On the other hand, Szatmari is concerned with a KrF excimer laser. As known by those skilled in the art, and as described in the specification of this application, the profiles of spectrums of these different lasers are completely different. In the presently claimed fluorine laser, the width of a spectrum line can be maintained that 1pm or lower without use of a line-narrowing device. But for the KrF excimer laser such as proposed by the teachings of Szatmari, a width of a spectrum line is several hundred pm without use of a line-narrowing device. Thus, within the teachings of Szatmari, one of ordinary skill in the art would understand that it is impossible to make the width less than 1 pm without using an optical element such as a prism or a grating.

Along these lines, it is respectfully noted that the teachings of Szatmari use a semi-transparent mirror 14 for selecting an appropriate wavelength, which is an optical device in contrast to the invention defined in applicant's claim 9. In this connection, the Official action referred to the teachings of Basting at column 10, lines 36-53. However, this portion of Basting is also discussing the alternative use of various optical elements, in contrast to present claim 9. For such reasons, applicant respectfully submits that the teachings of Szatmari cannot motivate one of ordinary skill in the art to the invention as set forth in the present claims, where the bandwidth of laser light is narrowed to a desired value by maintaining total pressure of the laser gas equal to or lower than 2.8 atm.

The Official action noted Szatmari at column 6, lines 8-10, lines 27-27, lines 37-39, and lines 41-47, together with column 8, lines 46-47. Of the portions of Szatmari cited in the Official action, perhaps the discussion at column 8, lines 44-47, may be the most pertinent, where it is discussed that the amplifier tube was filled with a partial pressure of various gases to a total pressure of 2.6 bar. However, by simply viewing Fig. 5 to which this portion of Szatmari refers, it is readily apparent that the device therein is an amplifier and the beam width is, in fact, being broadened, which is in direct contrast to applicant's claims. Most importantly, there is no description about a width of a spectrum line itself, or the width of a spectrum line relative to total gas pressure, at the portions of Szatmar cited in the outstanding Office action

(especially at column 6, lines 8-10). Therefore, these teachings cannot contemplate or suggest the invention as set forth in the present claims.

Concerning the teachings of Nozue and Wakabayashi, in this combination rejection the Official action acknowledged that Nozue does not contemplate or suggest the limitation of controlling the total pressure of the laser gas to about 2.8 atm or lower so that the bandwidth of the laser gas light oscillated by the laser chamber is narrowed to a desired value. The Official action cited the teachings of Wakabayashi as suggesting a general teaching of controlling the total pressure of the laser gases in such a way that the beam profile is shaped as desired. The Official action concluded that it would have been obvious to one of ordinary skill in the art to control the total pressure of the laser gas to about 2.8 atm or lower, because it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art.

The teachings of both Nozue and Wakabayashi require the use of optical devices for narrowing the bandwidth of the laser light therein and, therefore, these teachings cannot possibly motivate one of ordinary skill in the art to the narrowing of the bandwidth of laser light without use of an optical element, such as by reducing the total pressure of laser gases as required in the present claims. The teachings of Nozue utilize a dispersion prism 13 (an optical element) to select the particular wavelength of a light beam. The teachings of Wakabayashi utilize a beam splitter for selecting a wavelength range. Thus,

neither of these teachings contemplate nor suggest a system for narrowing the bandwidth of a laser light without the use of an optical element, such as required in claim 9.

Fig. 8 of Wakabayashi appears to show a relationship between beam width and gas total pressure. As explained by the inventors therein, at column 6, lines 66, through column 7, line 4, the experiments of the inventors shows that beam width W does not depend very much on the laser gas total pressure PT. Figs. 16A-16E of Wakabayashi appear to show that the beam width W remains constant while the gas total pressure PT is increasing. For such reasons, applicant respectfully submits that a person of ordinary skill in the art reviewing the teachings of Wakabayashi would not be motivated to operate a laser device to narrow a bandwidth of the laser light oscillated by the laser chamber to a desired value by maintaining total pressure of the laser gas equal to or lower than 2.8 atm, as required in the present claims.

From the above, it is readily apparent that the teachings of Basting, Szatmari, Nozue, and/or Wakabayashi do not disclose or suggest the invention as set forth in any of the present claims within the meaning of 35 U.S.C. § 102 or 35 U.S.C. § 103(a). Therefore, applicant respectfully requests that the examiner reconsider and withdraw all the rejections of the pending claims that were set forth in the outstanding Office action.

In view of the foregoing amendments and remarks, favorable consideration and allowance of claims 8-16 are respectfully requested. While it

is believed that all the claims in this application are in condition for allowance, should the examiner have any comments or questions, it is respectfully requested that the undersigned be telephoned at the below listed number to resolve any outstanding issues.

In the event this paper is not timely filed, applicant hereby petitions for an appropriate extension of time. The fee therefor, as well as any other fees which become due, may be charged to our deposit account No. 22-0256.

Respectfully submitted,
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